

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended): A method of processing a nickel-containing layer comprising:

providing a nickel-containing layer overlying a substrate;

introducing a process gas, said process gas comprising a carbonyl gas and a hydrogen halide gas;

forming plasma from said process gas; and

etching said nickel-containing layer by exposing said nickel-containing layer to said plasma, wherein

said process gas reacts with said nickel-containing layer and etches completely through a portion of said nickel-containing layer to said substrate.

Claim 2 (Canceled)

Claim 3 (Original): The method according to claim 2, wherein said hydrogen halide comprises at least one of hydrogen bromide (HBr), hydrogen chloride (HCl) and hydrogen iodide (HI).

Claim 4 (Original): The method according to claim 2, wherein said carbonyl gas comprises at least one of carbon monoxide (CO) and carbon dioxide (CO₂).

Claim 5 (Original): The method according to claim 2, wherein said process gas comprises HBr and CO.

Claim 6 (Original): The method according to claim 2, wherein said process gas comprises HBr and CO₂.

Claim 7 (Original): The method according to claim 2, wherein said process gas comprises HCl and CO.

Claim 8 (Original): The method according to claim 2, wherein said process gas comprises HCl and CO₂.

Claim 9 (Original): The method according to claim 2, wherein said process gas comprises HI and CO.

Claim 10 (Original): The method according to claim 2, wherein said process gas comprises HI and CO₂.

Claim 11 (Original): The method according to claim 2, wherein said nickel-containing layer contains nickel and titanium.

Claim 12 (Original): The method according to claim 1, wherein said nickel-containing layer contains nickel and iron.

Claim 13 (Original): The method according to claim 1, wherein said process gas also comprises an inert gas.

Claim 14 (Original): The method according to claim 13, wherein said inert gas comprises at least one of argon, helium, xenon and nitrogen.

Claim 15 (Original): The method according to claim 1, wherein said substrate is maintained at a temperature of between 40°C and 100°C.

Claim 16 (Original): The method according to claim 5, wherein a flowrate of HBr is less than 500 sccm and a flowrate of CO is less than 500 sccm.

Claim 17 (Original): The method according to claim 6, wherein a flowrate of HBr is less than 500 sccm and a flowrate of CO₂ is less than 500 sccm.

Claim 18 (Original): The method according to claim 7, wherein a flowrate of HCl is less than 500 sccm and a flowrate of CO is less than 500 sccm.

Claim 19 (Original): The method according to claim 8, wherein a flowrate of HCl is less than 500 sccm and a flowrate of CO₂ is less than 500 sccm.

Claim 20 (Original): The method according to claim 9, wherein a flowrate of HI is less than 500 sccm and a flowrate of CO is less than 500 sccm.

Claim 21 (Original): The method according to claim 10, wherein a flowrate of HI is less than 500 sccm and a flowrate of CO₂ is less than 500 sccm.

Claim 22 (Currently Amended): A plasma processing system comprising:

- a process chamber;
- a gas injection system configured to inject a process gas within the process chamber,

wherein said process gas comprises a carbonyl gas;

- a plasma source configured to create plasma from the process ~~gas~~ gas;
- a substrate holder, said substrate holder exposes a substrate comprising a Ni-containing layer to said plasma;
- a mechanically or electrically rotating DC magnetic field system; and
- a controller that controls said plasma processing system and said magnetic field system.

Claim 23 (Original): The system according to claim 22, wherein said plasma source comprises an inductive coil.

Claim 24 (Original): The system according to claim 22, wherein said plasma source comprises a plate electrode.

Claim 25 (Original): The system according to claim 22, wherein said plasma source comprises an antenna.

Claim 26 (Original): The system according to claim 22, wherein said plasma source comprises an ECR source.

Claim 27 (Original): The system according to claim 22, wherein said plasma source comprises a Helicon wave source.

Claim 28 (Original): The system according to claim 22, wherein said plasma source comprises a surface wave source.

Claim 29 (Original): The system according to claim 22, wherein said process gas further comprises a hydrogen halide gas.

Claim 30 (Original): The system according to claim 29, wherein the hydrogen halide comprises at least one of HBr, HCl, and HI.

Claim 31 (Original): The system according to claim 22, wherein the carbonyl gas comprises at least one of CO and CO₂.

Claim 32 (Original): The system according to claim 29, wherein the process gas comprises HBr and CO.

Claim 33 (Original): The system according to claim 29, wherein the process gas comprises HBr and CO₂.

Claim 34 (Original): The system according to claim 29, wherein the process gas comprises HCl and CO.

Claim 35 (Original): The system according to claim 29, wherein the process gas comprises HCl and CO₂.

Claim 36 (Original): The system according to claim 29, wherein the process gas comprises HI and CO.

Claim 37 (Original): The system according to claim 29, wherein the process gas comprises HI and CO₂.

Claim 38 (Original): The system according to claim 29, wherein the process gas further includes an inert gas.

Claim 39 (Original): The system according to claim 38, wherein the inert gas comprises at least one of argon, helium, xenon, and nitrogen.